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NEWS	1		Web Page for STN Seminar Schedule - N. America
NEWS	2	MAR 15	WPIDS/WPIX enhanced with new FRAGHITSTR display format
NEWS	3	MAR 16	CASREACT coverage extended
NEWS	4	MAR 20	MARPAT now updated daily
NEWS	5	MAR 22	LWPI reloaded
NEWS	6	MAR 30	RDISCLOSURE reloaded with enhancements
NEWS	7	APR 02	JICST-EPLUS removed from database clusters and STN
NEWS	8	APR 30	GENBANK reloaded and enhanced with Genome Project ID field
NEWS	9	APR 30	CHEMCATS enhanced with 1.2 million new records
NEWS	10	APR 30	CA/CAPLUS enhanced with 1870-1889 U.S. patent records
NEWS	11	APR 30	INPADOC replaced by INPADOCDB on STN
NEWS	12	MAY 01	New CAS web site launched
NEWS	13	MAY 08	CA/CAPLUS Indian patent publication number format defined
NEWS	14	MAY 14	RDISCLOSURE on STN Easy enhanced with new search and display fields
NEWS	15	MAY 21	BIOSIS reloaded and enhanced with archival data
NEWS	16	MAY 21	TOXCENTER enhanced with BIOSIS reload
NEWS	17	MAY 21	CA/CAPLUS enhanced with additional kind codes for German patents
NEWS	18	MAY 22	CA/CAPLUS enhanced with IPC reclassification in Japanese patents
NEWS	19	JUN 27	CA/CAPLUS enhanced with pre-1967 CAS Registry Numbers
NEWS	20	JUN 29	STN Viewer now available
NEWS	21	JUN 29	STN Express, Version 8.2, now available
NEWS	22	JUL 02	LEMBASE coverage updated
NEWS	23	JUL 02	LMEDLINE coverage updated
NEWS	24	JUL 02	SCISEARCH enhanced with complete author names
NEWS	25	JUL 02	CHEMCATS accession numbers revised
NEWS	26	JUL 02	CA/CAPLUS enhanced with utility model patents from China
NEWS	27	JUL 16	CAPLUS enhanced with French and German abstracts
NEWS	28	JUL 18	CA/CAPLUS patent coverage enhanced
NEWS EXPRESS	29	JUNE 2007:	CURRENT WINDOWS VERSION IS V8.2, CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP), AND CURRENT DISCOVER FILE IS DATED 05 JULY 2007.
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NEWS IPC8			For general information regarding STN implementation of IPC 8

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\* \* \* \* \* STN Columbus \* \* \* \* \*

FILE 'HOME' ENTERED AT 11:36:14 ON 25 JUL 2007

=> file caplus

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

0.21

0.21

FILE 'CAPLUS' ENTERED AT 11:36:36 ON 25 JUL 2007

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FILE COVERS 1907 - 25 Jul 2007 VOL 147 ISS 5

FILE LAST UPDATED: 24 Jul 2007 (20070724/ED)

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<http://www.cas.org/infopolicy.html>

=> s "Propylene oxide" and distillation

189202 "PROPYLENE"

305 "PROPYLENES"

189301 "PROPYLENE"

("PROPYLENE" OR "PROPYLENES")

1779920 "OXIDE"

346959 "OXIDES"

1878026 "OXIDE"

("OXIDE" OR "OXIDES")

35871 "PROPYLENE OXIDE"

("PROPYLENE" (W) "OXIDE")

58612 DISTILLATION

420 DISTILLATIONS

58766 DISTILLATION

(DISTILLATION OR DISTILLATIONS)

178194 DISTN

1792 DISTNS

178937 DISTN

(DISTN OR DISTNS)

196600 DISTILLATION

(DISTILLATION OR DISTN)

L1 845 "PROPYLENE OXIDE" AND DISTILLATION

=> s l1 and "vapor stream"

539939 "VAPOR"

72770 "VAPORS"

582817 "VAPOR"

("VAPOR" OR "VAPORS")

156579 "STREAM"

46416 "STREAMS"

185694 "STREAM"

("STREAM" OR "STREAMS")

1458 "VAPOR STREAM"  
("VAPOR" (W) "STREAM")

L2 1 L1 AND "VAPOR STREAM"

=> s l1 and (compressor or compressed or compress)

22610 COMPRESSOR  
9508 COMPRESSORS  
25806 COMPRESSOR  
(COMPRESSOR OR COMPRESSORS)  
67060 COMPRESSED  
3695 COMPRESS  
2096 COMPRESSES  
5657 COMPRESS  
(COMPRESS OR COMPRESSES)

L3 6 L1 AND (COMPRESSOR OR COMPRESSED OR COMPRESS)

=> d l3 1-6 abs ibib

L3 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN

AB A method of separating propylene oxide from a mixture (M) comprising propylene oxide and methanol, said method comprising (I) introducing said mixture (M) into an extractive distn . column; (II) addnl. introducing an extracting solvent into said extractive distillation column; (III) distilling propylene oxide overhead from said extractive distillation column as top stream; (IV) withdrawing a bottoms stream from said extractive distillation column; (V) compressing the top stream obtained overhead in (III) by means of at least one compressor to give a compressed vapor.

ACCESSION NUMBER: 2006:27027 CAPLUS

DOCUMENT NUMBER: 144:90402

TITLE: Separation of propylene oxide from a mixture comprising propylene oxide and methanol

INVENTOR(S): Gobbel, Hans-Georg; Schultz, Henning; Schultz, Peter; Patrascu, Renate; Schultz, Malte; Weidenbach; Meinolf

PATENT ASSIGNEE(S): Basf Aktiengesellschaft, Germany; The Dow Chemical Company

SOURCE: U.S. Pat. Appl. Publ., 21 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent  
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2006006054	A1	20060112	US 2004-884967	20040707
WO 2006003003	A1	20060112	WO 2005-EP7299	20050706
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
EP 1778659	A1	20070502	EP 2005-773852	20050706
R:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR			
CN 1993341	A	20070704	CN 2005-80026810	20050706
PRIORITY APPLN. INFO.:			US 2004-884967	A 20040707

L3 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN  
 AB A method for producing propylene oxide (from the epoxidn. of propylene with hydrogen peroxide in a methanol solvent), comprising steps (iii) and (iv), is described: (iii) separating the propylene oxide by distillation out from a mixture containing propylene oxide and at least one solvent (e.g., methanol) while using a distillation column during which a bottom flow and a vapor flow essentially containing propylene oxide are obtained; (iv) compressing the vapor flow obtained from step (iii) by means of at least one compressor while obtaining a compressed vapor.

ACCESSION NUMBER: 2004:902365 CAPLUS  
 DOCUMENT NUMBER: 141:380279  
 TITLE: Method for producing propylene oxide  
 INVENTOR(S): Goebbel, Hans-Georg; Bassler, Peter; Teles, Joaquim H.; Rudolf, Peter  
 PATENT ASSIGNEE(S): BASF Aktiengesellschaft, Germany  
 SOURCE: PCT Int. Appl., 25 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004092150	A1	20041028	WO 2004-EP4104	20040416
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZA, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE 10317519	A1	20041104	DE 2003-10317519	20030416
CA 2522481	A1	20041028	CA 2004-2522481	20040416
EP 1620416	A1	20060201	EP 2004-727899	20040416
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
BR 2004009432	A	20060418	BR 2004-9432	20040416
CN 1791588	A	20060621	CN 2004-80013461	20040416
US 2006205964	A1	20060914	US 2005-553441	20051014
PRIORITY APPLN. INFO.:			DE 2003-10317519	A 20030416
			WO 2004-EP4104	W 20040416
REFERENCE COUNT: 1			THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE.FORMAT	

L3 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN  
 AB A method is described for producing an epoxide (e.g., propylene oxide) comprising: (i) preparation of a stream (S1) containing a compressed liquid alkene (e.g., propylene); (ii) expansion of at least part of the stream (S1) by heat absorption and at least partial evaporation of the liquid alkene; (iii) reaction of the alkene obtained according to step (ii) with a hydroperoxide (e.g., hydrogen peroxide) in the presence of at least one solvent (e.g., methanol) and at least one catalyst (e.g., titanium silicalite) to obtain a mixture containing the epoxide and the solvent(s).

ACCESSION NUMBER: 2004:902364 CAPLUS

DOCUMENT NUMBER: 141:380278  
 TITLE: Method for producing an epoxide  
 INVENTOR(S): Goebbel, Hans-Georg; Bassler, Peter; Teles, Joaquim  
 Henrique; Rudolf, Peter  
 PATENT ASSIGNEE(S): BASF Aktiengesellschaft, Germany  
 SOURCE: PCT Int. Appl., 27 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004092149	A1	20041028	WO 2004-EP4077	20040416
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE 10317520	A1	20041104	DE 2003-10317520	20030416
CA 2522466	A1	20041028	CA 2004-2522466	20040416
EP 1620415	A1	20060201	EP 2004-727858	20040416
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
BR 2004009425	A	20060425	BR 2004-9425	20040416
CN 1791587	A	20060621	CN 2004-80013456	20040416
US 2006276662	A1	20061207	US 2005-553516	20051014
PRIORITY APPLN. INFO.:			DE 2003-10317520	A 20030416
			WO 2004-EP4077	W 20040416
REFERENCE COUNT:	5	THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT		

L3 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN  
 AB Propylene (I) [115-07-1] was oxidized directly by a HOOAc [79-21-0] process to give propylene oxide (II) [75-56-9] in good yield and HOAc [64-19-7] as a useful by-product. HOOAc was made by continuously feeding a mixture of MeCHO [75-07-0], EtOAc, a metal ion catalyst, and compressed air into a specially designed multiple gas-sparged reactor operated at 30-50°/25-40 atmospheric. A stabilizer was added to the product before it was fed to a distillation column operated at 300-500 mm pressure. Unreacted MeCHO was drawn from the top of the column and a 30% solution of HOOAc in EtOAc was drawn from the bottom. This solution was used directly for the epoxidn. step. The exothermic heat of the epoxidn. reaction was removed by using a series of multiple gas-sparged reactors with cooling coils and horizontal perforated plates (1-5 mm diameter openings, 5-15% plate opening). The overall I-HOOAc ratio was 2.3. During 2-3 h at 50-80°/9-12 atmospheric, 97-8% HOOAc was consumed to give a 90-2% yield of II. The column was distilled at 1.3-5.0 kg/cm2 at column bottom temperature 100-50°.

ACCESSION NUMBER: 1977:156007 CAPLUS  
 DOCUMENT NUMBER: 86:156007  
 TITLE: Make propylene oxide direct  
 AUTHOR(S): Yamagishi, Kazuo; Kageyama, Osamu; Haruki, Hiroshi; Numa, Yoshiaki  
 CORPORATE SOURCE: Daicel, Ltd., Tokyo, Japan  
 SOURCE: Hydrocarbon Processing (1966-2001) (1976), 55(11), 102-4  
 CODEN: HYPRAX; ISSN: 0887-0284

DOCUMENT TYPE: Journal  
LANGUAGE: English

L3 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN

AB Poly(oxyethylene) (I) of high mol. weight is prepared by irradiation with 0.001-10 megarads of compressed trioxane (II) at 30-62° followed by a polymerization above 30° for 0.02-2 days. Compression of II to a d. of 1-1.4 is done by melting and cooling or by mech. pressure above 14 atmospheric. Irradiation may be done by ionization radiation from electrons, protons, and neutrons of high energy or by x- or γ-rays from isotopes or suitable apparatus. A closed vessel, an inert atmospheric, and as low as possible free space are preferred. Nonpolymerized

II is eliminated by distillation or extraction. I has a reduced viscosity of 0.5-3 dl./g., determined at 135° with 0.1 g. polymer in 100 ml. butyrolactone, m.p. 185-90°, d. 1.45-1.5. Thus, 6 samples of com. II were melted at 80°, cooled, and irradiated with 2 m.e.v. and heated 5 hrs. at 55°. Conversions of 32.3-48.9% were obtained as compared to 28.1-40.7% for noncompressed II with reduced viscosities of 1.28-2.04 to 0.97-1.37, resp.

ACCESSION NUMBER: 1964:448318 CAPLUS  
DOCUMENT NUMBER: 61:48318  
ORIGINAL REFERENCE NO.: 61:8438d-f  
TITLE: Poly(oxyethylene) by irradiation of trioxane  
INVENTOR(S): Marans, Nelson S.; Mitchell, Fern W.  
PATENT ASSIGNEE(S): W. R. Grace & Co.  
SOURCE: 5 pp.  
DOCUMENT TYPE: Patent  
LANGUAGE: Unavailable  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 1352671		19640214	FR 1963-930752	19630408
GB 983673			GB	
PRIORITY APPLN. INFO.:			US	19620529

L3 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN

AB Alkylene carbonates can be made by a relatively simple process, but special catalysts are needed. Ethylene oxide or propylene oxide was introduced from storage by a pos. displacement pump as was the catalyst solution. CO<sub>2</sub> was supplied from a Cardox storage unit at 40° and delivered to the reactor by a compressor set at 1500 lb./sq. in. gage. The holding time in the reactor could be varied from 20-60 min. by adjusting the alkylene oxide and catalyst solution feed rates. Mixing was effected by a high pressure gear pump. The pressure lowered to 5 lb./sq. in. gage at the gas-liquid separator where the bulk of excess CO<sub>2</sub> was vented. The small addnl. amount of dissolved CO<sub>2</sub>, with some unreacted ethylene oxide, was released from the product in crude storage. The crude product was distilled in a glass-lined batch still having a short steam-jacketed column serving mainly for elimination of entrainment. The ethylene carbonate distilled at 110°/3-5 mm. When quaternary ammonium halide catalysts were used, the crude product was relatively stable and could be distilled without prior separation of the catalyst.

Distillation at 50 mm. or below is desirable to ensure good product quality. Generally, no low-boiling forerun is found, and colorless ethylene carbonate, m. 36°, can be taken off directly overhead. Catalyst is recovered for reuse by not continuing the distillation beyond a 90-5% recovery of the product. The distillation residue may be used directly, but it is desirable to discard about 30% and make up the addnl. requirement with fresh catalyst.

ACCESSION NUMBER: 1958:92355 CAPLUS  
DOCUMENT NUMBER: 52:92355

ORIGINAL REFERENCE NO.: 52:16192i,16193a-c  
TITLE: Preparation and properties of the alkylene carbonates  
AUTHOR(S): Peppel, W. J.  
CORPORATE SOURCE: Jefferson Chem. Co., Inc., Austin, TX  
SOURCE: Journal of Industrial and Engineering Chemistry  
(Washington, D. C.) (1958), 50, 767-70  
CODEN: JIECAD; ISSN: 0095-9014  
DOCUMENT TYPE: Journal  
LANGUAGE: Unavailable

=> d hist

(FILE 'HOME' ENTERED AT 11:36:14 ON 25 JUL 2007)

FILE 'CAPLUS' ENTERED AT 11:36:36 ON 25 JUL 2007

L1 845 S "PROPYLENE OXIDE" AND DISTILLATION  
L2 1 S L1 AND "VAPOR STREAM".  
L3 6 S L1 AND (COMPRESSOR OR COMPRESSED OR COMPRESS)

=> s distillation and product and vapor and (COMPRESSOR OR COMPRESSED OR COMPRESS)  
6 DISTALLATION

1218027 PRODUCT  
1433016 PRODUCTS  
2309650 PRODUCT  
(PRODUCT OR PRODUCTS)  
539939 VAPOR  
72770 VAPORS  
582817 VAPOR  
(VAPOR OR VAPORS)  
22610 COMPRESSOR  
9508 COMPRESSORS  
25806 COMPRESSOR  
(COMPRESSOR OR COMPRESSORS)  
67060 COMPRESSED  
3695 COMPRESS  
2096 COMPRESSES  
5657 COMPRESS  
(COMPRESS OR COMPRESSES)

L4 0 DISTALLATION AND PRODUCT AND VAPOR AND (COMPRESSOR OR COMPRESSED  
OR COMPRESS)

=> s distillation and product and vapor and (COMPRESSOR OR COMPRESSED OR COMPRESS)

58612 DISTILLATION  
420 DISTILLATIONS  
58766 DISTILLATION  
(DISTILLATION OR DISTILLATIONS)  
178194 DISTN  
1792 DISTNS  
178937 DISTN  
(DISTN OR DISTNS)  
196600 DISTILLATION  
(DISTILLATION OR DISTN)  
1218027 PRODUCT  
1433016 PRODUCTS  
2309650 PRODUCT  
(PRODUCT OR PRODUCTS)  
539939 VAPOR  
72770 VAPORS  
582817 VAPOR  
(VAPOR OR VAPORS)  
22610 COMPRESSOR  
9508 COMPRESSORS  
25806 COMPRESSOR  
(COMPRESSOR OR COMPRESSORS)

67060 COMPRESSED  
3695 COMPRESS  
2096 COMPRESSES  
5657 COMPRESS  
(COMPRESS OR COMPRESSES)  
L5 167 DISTILLATION AND PRODUCT AND VAPOR AND (COMPRESSOR OR COMPRESSED  
OR COMPRESS)

=> s 15 and "heat return"  
1361749 "HEAT"  
57006 "HEATS"  
1377387 "HEAT"  
( "HEAT" OR "HEATS" )  
46074 "RETURN"  
11137 "RETURNS"  
56160 "RETURN"  
( "RETURN" OR "RETURNS" )  
12 "HEAT RETURN"  
( "HEAT" (W) "RETURN" )  
L6 0 L5 AND "HEAT RETURN"

=> s 15 and "take off"  
146081 "TAKE"  
171792 "TAKES"  
311766 "TAKE"  
( "TAKE" OR "TAKES" )  
338384 "OFF"  
2816 "OFFS"  
340653 "OFF"  
( "OFF" OR "OFFS" )  
2139 "TAKE OFF"  
( "TAKE" (W) "OFF" )  
L7 0 L5 AND "TAKE OFF"

=> s 15 and oxide  
1779920 OXIDE  
346959 OXIDES  
1878026 OXIDE  
(OXIDE OR OXIDES)

L8 6 L5 AND OXIDE

=> d 18 1-6 abs ibib

L8 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN  
AB Purification of ethylene oxide from the gaseous products of  
the gas-phase oxidation of ethylene with mol. O in the presence of a silver  
catalyst involves the countercurrent contact of the gaseous  
product with an absorbent solution; recycle of the absorption tower  
offgas to the oxidation step; feeding of the absorption tower bottom to  
ethylene oxide evaporation tower; distillation of ethylene  
oxide and water; removal of water from dehydration tower; removal  
of light fraction; and purification of ethylene oxide by  
distillation, wherein the vapor from the evaporation tower is used  
as heat source for the ethylene oxide distillation tower;  
the ethylene oxide vapor from the ethylene  
oxide distillation tower is fed to the coolant evaporator of a  
heat pump; a portion of the resulting liquid ethylene oxide is  
recycled to the ethylene oxide distillation tower and the  
remainder is discharged; the coolant evaporated in the heat pump is  
compressed and used as the heat source for the ethylene  
oxide evaporation tower.

ACCESSION NUMBER: 1987:215865 CAPLUS  
DOCUMENT NUMBER: 106:215865  
TITLE: Purification of ethylene oxide  
INVENTOR(S): Kakimoto, Yukihiro; Kajimoto, Nobuaki; Kiguchi, Isamu



PATENT ASSIGNEE(S): Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 62016473	A	19870124	JP 1985-152437	19850712
PRIORITY APPLN. INFO.:			JP 1985-152437	19850712

L8 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN  
 AB Purification of ethylene oxide from gas-phase oxidation of ethylene with mol. O in the presence of a silver catalyst involves the countercurrent contact of the gaseous reaction product with an absorbent solution; recycle of the absorption tower offgas to the oxidation step; feeding of the ethylene oxide absorption tower bottom to ethylene oxide evaporation tower; distillation of ethylene oxide and water; removal of water from a dehydration tower; removal of light fractions; and purification of ethylene oxide by distillation, wherein the ethylene oxide vapor from ethylene oxide distillation tower is fed to the coolant evaporator of a heat pump; a portion of the resulting liquid ethylene oxide is recycled to the distillation tower and the remainder discharged; the coolant evaporated in the heat pump is compressed and fed into the coolant evaporator also acting as the ethylene oxide evaporation tower reboiler, to the ethylene oxide distillation tower reboiler, and then to the ethylene condenser.

ACCESSION NUMBER: 1987:215864 CAPLUS  
 DOCUMENT NUMBER: 106:215864  
 TITLE: Purification of ethylene oxide  
 INVENTOR(S): Kakimoto, Yukihiko; Kajimoto, Nobuaki; Kiguchi, Isamu  
 PATENT ASSIGNEE(S): Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 62016474	A	19870124	JP 1985-152438	19850712
PRIORITY APPLN. INFO.:			JP 1985-152438	19850712
OTHER SOURCE(S):		CASREACT 106:215864		

L8 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN  
 AB Present production is self-sufficient, but assurance is desired that it is of optimum quality. Conditions of the existing liquid Zn-air atomization plant were varied by the use of N; the products from the Zn distillation and the electrolytic methods were similar in the bulk chemical analysis of well-controlled production samples. Variation is more apparent in the values of cementation activity as obtained by action for 1/2 hr. at 80° in 20 weight % Cu(II) at pH 4.5-5.0 This was correlated with the average particle diameter of the sieve fractionation and weight fractions. Electrolytic powder usually contains a larger fine fraction whereby rapid oxide coating occurs. As for air pulverization, the activity rarely exceeds 96%. but higher air pressure is less disastrous than the use of high c.d. exceeding 1000 amp./cm.2 Elimination of oxide coating and activity of 98% or better are obtained by condensation of vapors from purer material or from Pb desilverizing skimmings. Pulverization by compressed N is equally effective if not preferable since the bulk fraction is displaced

from the 0.02 to the 0.06 mm. diameter range. probably with better packing quality. Consistently high quality was obtained even when the raw material contained 1% Pb + Fe or 0.5% Pb or Fe despite crystalline segregation by Pb: indeed such impurity promotes higher activity. 13 references.

ACCESSION NUMBER: 1967:107481 CAPLUS  
DOCUMENT NUMBER: 66:107481  
TITLE: Some properties of zinc powder produced in Kurdzhali, Bulgaria  
AUTHOR(S): Karaivanov, St.; K'oseva, Tsv.  
CORPORATE SOURCE: Ecole Normale Sup., Plovdiv, Bulg.  
SOURCE: Nauchni Trudove na Visshiya Pedagogicheski Institut, Plovdiv, Matematika, Fizika, Khimiya, Biologiya (1966), 4(3), 71-8  
CODEN: NVIPA3; ISSN: 0369-6553  
DOCUMENT TYPE: Journal  
LANGUAGE: Bulgarian

L8 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN

AB Listed are 14 aliphatic aldehydes along with their occurrence, odors and compns. Synthetic aldehydes can be obtained by (a) conversion of alcs. into aldehydes by direct oxidation (such as with CrO<sub>3</sub>), which has the disadvantage of the formation of several by-products (acids, esters, and acetols) and (b) catalytic dehydrogenation of alcs. and partial or complete combustion of H by the air O: an alc. vapor-air mixture is then passed over a catalyst (Cu, Ag, Fe oxide + Mo oxide, Zn chromite, etc.) at an elevated temperature and the reaction product is cooled. The maximum conversion depends on the temperature, pressure, air/alc. ratio and reaction time; carboxylic acids, the main by-products, are present only in small amts. The catalytic alc. dehydrogenation being a vapor-phase process, it is suitable for a continuous operation in which the temperature control is the most important factor in limiting the side reactions and catalyst deactivation. The process principles are shown on a flow scheme: the reactor consists of a number of stainless-steel 316 or. Ag tubes immersed in a bath (the outside dimensions of which are 20 in. diameter and 12 in. height) allowing a 15-lb./hr. production. The coolant b.p. is about 660°F. and the controlled temperature varies from 650°F. to about 900°F., depending on the alc. used and the temperature profile in the catalyst bed.

The

alc. is fed into a 50-gal. tank and, by means of compressed air on the liquid surface, it is fed into a pipeline which passes through a thermo-static bath and a flowmeter. A molten salt bath provides the heat to vaporize the alc. A mixture of NaNO<sub>2</sub> + KNO<sub>3</sub> (melting at about 300°F.) is used as a bath liquid and, depending on the alc. used, it is kept at 400-575°F. by a controlled elec. heater. Behind the molten-salt bath the alc. vapor and air are combined and fed into the reactor; the conversion to aldehyde takes place at about 1 atmospheric. The hot effluent from the reactor passes through a condenser is regulated on the coolant side by connecting it to the alc. thermostat bath. The aldehyde is separated from the water by decantation. Aldehyde traces are removed from the off-gas by a specially-designed Cottrell precipitator. The yields vary between 85 and 95% depending on the aldehyde produced. The aldehyde is purified by fractional distillation and a 99%-pure product is obtained by batch distillation 31 references.

ACCESSION NUMBER: 1966:84066 CAPLUS  
DOCUMENT NUMBER: 64:84066  
ORIGINAL REFERENCE NO.: 64:15731e-h  
TITLE: Small-scale automated unit for the continuous production of synthetic aldehydes  
AUTHOR(S): Knol, H. W.  
CORPORATE SOURCE: NV Chem. Fabriek Naarden, Neth.  
SOURCE: Manufacturing Chemist & Aerosol News (1966), 37(2), 42-5  
CODEN: MCANAH; ISSN: 0025-2557  
DOCUMENT TYPE: Journal

LANGUAGE: English

L8 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN

AB Oxidation products, e.g. ethylene oxide, acrolein, and methacrolein, are prepared by the controlled catalytic oxidation of corresponding olefinic hydrocarbons with O. For example, the reaction mixture obtained by the catalytic oxidation of propylene with O in the vapor phase in the presence of a Cu<sub>2</sub>O catalyst and quenching with H<sub>2</sub>O contains essentially 2.6% acrolein, 34.2% propylene and propane, 0.8% O, 19.4% permanent gases, and 43% water. The mixture is cooled from 149° to 49° in 2 stages. Two separate liquid condensates are obtained, the first containing 8.8% acrolein and 76% water and the second containing 4.2% acrolein and 13% water. The remaining vapor phase contains 87% acrolein, 1.3% water, the hydrocarbons that are gaseous under normal conditions, and the permanent gases of the reaction mixture. The vapor phase is compressed from its pressure of 5.6 atmospheric to 21 atmospheric and is introduced into an absorption tower at the bottom. A jet of water is introduced at the top. The first liquid condensate, separated during the quenching of the reaction mixture, is introduced into the absorption tower at a place midway between the water inlet and the vapor phase inlet. The absorption tower is maintained at 21 ° and 21 atmospheric. Acrolein is selectively absorbed by the aqueous solvent, forming a solution of water and acrolein in a proportion of 50.1 moles/water/mole acrolein. The gases leaving at the top of the tower contain essentially propylene, propane, and permanent gases. The absorption solution is withdrawn from the bottom of the tower and is distilled with the second condensate. The top fraction from the distillation contains acrolein and a relatively small amount of water. More than 99% acrolein is recovered from the reaction mixture. The aqueous phase at the bottom

of the column is partially returned to the absorption tower. A total of 17.6 moles water are introduced at the top of the tower per mole of acrolein which is recovered by distillation. If this reaction is conducted under essentially the same conditions, with the exception that the vapor phase is introduced into the absorption tower without previous compression and both liquid condensates are distilled directly in the distillation column, 35.2 moles water are required per mole acrolein to obtain an equivalent yield of acrolein.

ACCESSION NUMBER: 1964:16023 CAPLUS  
DOCUMENT NUMBER: 60:16023  
ORIGINAL REFERENCE NO.: 60:2772a-e  
TITLE: Recovery of water-soluble oxidation products of hydrocarbons  
INVENTOR(S): Courter, Martin L.; Thayer, David S.  
PATENT ASSIGNEE(S): Shell Internationale Research Maatschappij N. V.  
SOURCE: 6 pp.  
DOCUMENT TYPE: Patent  
LANGUAGE: Unavailable  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 1147932		19630502	DE 1961-S73353	19610406
US 3097215		19630709	US 1960-21003	19600408
PRIORITY APPLN. INFO.:			US	19600408

L8 ANSWER 6 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN

AB The process of continuous hydrogenation under pressure was carried out in an apparatus in which H was introduced into a receiver working under 0.5-atmospheric excess pressure; upon increasing the pressure above a determined value, the feeding line closed automatically, and when the pressure fell to 0.1 atmospheric, the compressor also stopped automatically, forcing H into 2

buffers at 400 atmospheric; one of the buffers served to feed H to the continuously working device mounted separately; the substance to be hydrogenated was forced into the mixing 3-way pipe by means of a high-pressure pump and H was introduced from the buffer; the mixture was directed into 2 0.5-1. tubes filled with suitable catalysts and fitted with a 3-zone elec. furnace (manometers and heat gages were installed at different points); the product, after passing through the reactor, was cooled in a condenser and collected in a receiver-separator out of which H entered the atmospheric through a throttle valve and a gas counter; the hydrogenation product also passed through a throttle valve into a collector at atmospheric pressure. A continuous process for obtaining furyl alc. (I) was developed by using the above apparatus in which Cu chromite, stabilized with alkaline earth metal oxides, was used as a catalyst. This catalyst was also found to be most suitable for the hydrogenation of carbonyl groups or in similar cases, e.g., the hydrogenation of hydroxyvaleric aldehyde in pentanediol (in this case, by a batch process). The hydrogenation of furan (II) to yield tetrahydrofuran (III) was carried out by introducing it together with H in the tubular reactor filled with skeletal Ni; heating was accomplished by circulating a liquid heated to constant temperature (aqueous ethylene glycol

(IV) with

a constant b.p.). The continuous process of hydrogenation of nitriles into amines (e.g. the dinitrile of adipic acid) was carried out to give 85% basic products on skeletal Co, in MeOH saturated with NH<sub>4</sub>OH. The yield of nitrites prepared from chlorides by the action of alkali metal cyanides was increased by working at atmospheric pressure, but by using high-boiling solvents, e.g., aqueous glycol for the preparation of dinitriles

from

dichlorobutane (V) and dichlorodibutyl ether (VI), adiponitrile in the preparation of chlorovaleronitrile, and glycerol in the synthesis of the nitrile of hydroxycaproic acid. In all cases the yield was remarkably increased. The esterification of chlorides for obtaining the complex esters required in the plastic industry was used successfully with salts of fatty acids. Furfural (VII) obtained from the peat industry was quite unsuitable for the synthesis of "semi-products." VII obtained from the hydrolysis of resinous wood was not used either, owing to the presence (even in small quantities) of compds. of the terpene series which cause the formation of resins. The hydrogenation of VII into tetrahydrofuryl alc. (VIII) was carried out in 2 stages, and satisfactory results were obtained at 95-100°, under a pressure of 100 atmospheric, and a volume rate of 0.12-0.3, during 350 hrs.; under these conditions the moist product contained 97-8% I and the content of VII did not exceed 0.2%. I was then converted into VIII (yield 78%) by the batch process at 130-5°, under a pressure of 100 atmospheric with Ni on Cr oxide as the catalyst, or by the continuous process at 120-5°, 100 atmospheric, with Ni on Cr oxide, and a volume rate of 0.2. The crude hydride was obtained in a 100% yield (on the weight of I) and contained 90% VIII and 0.2-0.3% I. VIII, b. 177-8°, d. 1.050, n 1.4502, was mostly used in further syntheses: VIII with SOCl<sub>2</sub> in the presence of C<sub>5</sub>H<sub>5</sub>N yielded 75% tetrahydrofurfuryl chloride (IX), b<sub>7-8</sub> 37-8°, d<sub>20</sub> 1.1112, n<sub>20D</sub> 1.4556. IX with NaNH<sub>2</sub> in liquid NH<sub>3</sub> yielded 65% 4-pentyn-1-ol (X), b<sub>9</sub> 47°, d<sub>20</sub> 0.9132, n<sub>20D</sub> 1.4455, hydroxyl number 19.7. X in the presence of CuCl and NH<sub>4</sub>Cl was oxidized in an aqueous solution of O of the air into 95% 4,6-decadiyne-1,10-diol which in its turn, with Raney Ni catalyst at room temperature and atmospheric pressure yielded 1,10-decanediol in a quant.

yield; the

oxidation of this diol with HNO<sub>3</sub> yielded 80% sebacic acid. The dehydration and the simultaneous isomerization of VIII carried out at 340-60° over activated Al<sub>2</sub>O<sub>3</sub> (obtained by treating γ-Al<sub>2</sub>O<sub>3</sub> with HNO<sub>3</sub> and heating 4 hrs. at 450°) with a volume rate of 1.23 yielded 85% dihydropyran (XI), b<sub>760</sub> 86°, d<sub>20</sub> 0.923, soluble in H<sub>2</sub>O (3% at room temperature) and in most organic compds. XI reacted easily with

various

substances like alcs., glycols, mercaptans, organic acids, and added Cl, H, HCl, COCl<sub>2</sub>, or H<sub>2</sub>O; in the presence of traces of mineral acid XI with VIII

yielded 85% product, b<sub>15</sub> 124-6°, d<sub>20</sub> 1.046, n<sub>20D</sub> 1.4591, a selective solvent of a few inorg. compds., and yielded with IV a liquid, b<sub>12</sub> 187-8°, d<sub>20</sub> 1.073, n<sub>20D</sub> 1.4622. XI heated with H<sub>2</sub>O at 50° in the presence of traces of mineral acid yielded 87% 8-hydroxyvaleric aldehyde (XII), b<sub>2</sub> 51-2°, d<sub>20</sub> 1.053, n<sub>20D</sub> 1.4510, soluble in H<sub>2</sub>O. XII hydrogenated over Cu-Cr catalyst at 130° under a pressure of 150 atmospheric yielded 92% 1,5-pentanediol (XIII), odorless

viscous liquid, b<sub>3</sub> 119-20°, d<sub>20</sub> 0.989, n<sub>20D</sub> 1.4470. XI under a pressure of 40-60 atmospheric and at 110-15° in the presence of Ni over Cr oxide yielded 95% of tetrahydropyran (XIV), b<sub>760</sub> 87-8°, d<sub>20</sub> 0.881, n<sub>20D</sub> 1.4211, soluble in H<sub>2</sub>O (approx. 95% at 20°). In the vapor phase, the hydrogenation of XI under atmospheric pressure and at 120-30° with a volume rate of 0.2-0.25 over skeletal Ni yielded only 85% XIV. XIV with SOCl<sub>2</sub> at 105-10° in the presence of ZnCl<sub>2</sub> yielded 50-55% 1,5-dichloropentane (XV) accompanied by much resin formation. XIV boiled with AcCl, 5 hrs., yielded 93-5% chloropentanol (XVI) acetate, b<sub>15</sub> 100-3°, d<sub>20</sub> 1.053, n<sub>20D</sub> 1.4360, which on being reesterified with MeOH yielded 94% of XVI, b<sub>12</sub> 98-9°, d<sub>20</sub> 1.049, n<sub>20D</sub> 1.4510. XVI with SOCl<sub>2</sub> at 130° yielded 80% XV, b<sub>14</sub> 69-71°, d<sub>20</sub> 1.093, n<sub>20D</sub> 1.4530; this roundabout way permitted increasing the yield of XV to 72% calculated on XIV. The action of cyanides and alkali metals on XVI at 125° in aqueous glycerol, 2 hrs., yielded 85% of the nitrile of hydroxycaproic acid, b<sub>20</sub> 150-2°, d<sub>20</sub> 0.970, n<sub>20D</sub> 1.4470, which was reduced in a NH<sub>4</sub>OH-alc. solution at 50° and 50-70 atmospheric with Raney Ni as catalyst to yield 73% aminohexanol, m. 50-1°, b<sub>5</sub> 118-20°. XIV oxidized by HNO<sub>3</sub> (d. 1.32) at a temperature below 25° yielded 87% glutaric acid, m. 97.5°, soluble in H<sub>2</sub>O and alc. The action of Ac<sub>2</sub>O on VII in the presence of AcOK at 135-40° yielded the K salt of furylacrylic acid (XVII); the K salt in its turn yielded 65% XVII, m. 139.5°, acid number 401. Acetaldehyde was condensed with VII in 1% NaOH at 30° to yield 80% of the anhydride of XVII, m. 49-50°, b<sub>10</sub> 95-102°, which could not be oxidized to give the acid. A dry current of HCl was passed into an alc. solution of XVII at 100° to yield the ester of oxopimelic acid (XVIII). Other esters (di-Et, di-Pr, di-Bu) were also obtained. The esters of XVIII saponified more easily in an alkaline medium than in an acid medium. The synthesis of II consisted in the removal of a carbonyl group from the mol. of VII at 400-20° over a mixture of the oxides of Zn, Cr, and Mn in molar ratio 7:5:1 (mixed with graphite in the form of 4 + 4 mm. tablets) with a volume rate of 0.3; simultaneously with VII water/vapor was added in the ratio 1:2.5; the reaction mixture contained CO<sub>2</sub>, H<sub>2</sub>, and 95% II; the catalyst lost its activity after 50-5 hrs. and had to be regenerated; this was done in the same apparatus by blowing air 5-6 hrs. at a temperature not above 550°, and a subsequent treatment with H<sub>2</sub>. II was hydrogenated by bringing the reaction mixture (without any previous separation) over molten Ni catalyst at about 120° with a volume rate of 0.12, and cooling in Dry Ice to yield 90% III. After the separation of IV by simply cooling with H<sub>2</sub>O, the gases were recirculated. VI formed an azeotropic mixture with H<sub>2</sub>O (b. 63°) and contained 95% III. The ring of III was opened rather easily by the action of AcCl at 50°, upon cooling, to give 90% chlorobutanol acetate, b<sub>3.5</sub> 72-5°, d<sub>20</sub> 1.0852, n<sub>20D</sub> 1.4360; this, treated with AcOK at 160-70° yielded butanediol diacetate (XIX), b. 230°, d<sub>20</sub> 1.0460, n<sub>20D</sub> 1.4220. XIX could also be obtained in a 62% yield directly from III by the action of Ac<sub>2</sub>O in the presence of H<sub>2</sub>SO<sub>4</sub> at 93° (the temperature gradually rising to 145°) and the subsequent distillation of the excess Ac<sub>2</sub>O and AcOH formed. XIX reesterified with MeOH in the presence of a small amount HCl (3% on alc.) at 65-70° yielded AcOME and 90% butanediol (XX), m. 18.5°, b<sub>760</sub> 230°, d<sub>20</sub> 1.021, n<sub>20D</sub> 1.4460. The opening of the ring of III in the continuous process by the action of SOCl<sub>2</sub> and CoCl<sub>2</sub> at 100-2° yielded 30-80% V, b<sub>13</sub> 48-50°, d<sub>20</sub> 1.128, n<sub>20D</sub> 1.4520, and 60-14% dichlorobutyl ester, b<sub>13</sub> 126-8°, d<sub>20</sub> 1.0747, n<sub>20D</sub> 1.4568. V with alkali metal cyanides was converted at 140° in an aqueous solution (85%) of IV in the presence of a small amount of KI into

adiponitrile, d20 0.9531, n20D 1.4340, which by saponification in an alkaline or an

acid medium yielded 85% adipic acid, m. 150-1°. Hexamethylene diamine was obtained in a 85% yield by the hydrogenation of adiponitrile at 85-90° under a pressure of 100 atmospheric with a volume rate of 0.3 over molten Co catalyst in a NH<sub>3</sub> alc. solution. The preparation of ethers was accomplished by the interaction of V or VI with the dry Na salts of the synthetic fatty acids containing 7-9 C atoms in a medium consisting of the same free acids at 180-90°, 14 hrs., by washing with acidified H<sub>2</sub>O, and distilling. The action of alkali metal cyanide on VI at elevated

temperature in

an aqueous IV medium yielded 80% hydroxydivaleric acid (XXI) dinitrile, b5 175-80°, d20 0.963, n20D 1.4459. The alkaline saponification of XXI dinitrile yielded 77% XXI, m. 85-6°, and from XXI itself an ether b3 237-39°, d20 0.9353, n20D 1.4499, and saponification number 256, was obtained. The reduction of XXI dinitrile in an NH<sub>3</sub>-alc. solution at 100° over Raney Ni yielded 76% 5,5-di-(aminoamyl) ether, b. 135-7°, d20 0.9330, n20D 1.4627. VI heated with K phthalimide with the subsequent decomposition of the obtained product yielded 70% 4,4'-di(aminobutyl)ether, b9 125-6°, n20D 1.4568. VI treated with AcOK at 170-80° yielded 90% dibutyleneglycol(XXII) diacetate, b4 147-50°, d20 1.0253, n20D 1.4340, which reesterified with MeOH as above for XX yielded 92% XXII, b4 140-1°, d20 1.0041, n20D 1.4537. The substitution of one Cl in V by a cyano group in a solution of adiponitrile at 135-40° yielded 62% chlorovaleronitrile, b28 115-17°, d20 1.0536, n20D 1.4430, which treated with Na<sub>2</sub>S in an aqueous solution of IV at 115-20° yielded 70% thiodivaleric acid dinitrile (XXIII), b3 189-90°, d20 1.023, n20D 1.4868. The saponification of XXIII in an acid medium yielded 75% thiovaleric acid, m. 94-5°. The oxidation of III by HNO<sub>3</sub> at below 25-30° yielded 90% succinic acid (XXIV), m. 183°. The oxidation under less severe conditions, e.g. in HNO<sub>3</sub> (d. 1.34) at 20-8° in C<sub>6</sub>H<sub>6</sub> yielded 37% butyrolactone (XXV), b. 198-20°, d20 1.298, n20D 1.4350, and XXIV. XXV was also obtained by the dehydrogenation of XX over Cu-Cr catalyst at 230-40° (yield: 95%). The characteristics of a number of complex esters obtained from the products of VII are given in the order: name of acid, name of alc., b.p., d20, n20D, saponification number, flash p., specific volume resistance (ohm/cm.), losses on heating 6 hrs. at 100 (%), stability to freezing of the poly(vinyl chloride) films in degrees: XXIV, 2-ethylhexyl alc. (XXVI), 176-8° (25), 0.930, 1.4420, 333, 186, 2.4 + 1010, 0.2, -25°; XXIV, alcs. with C12, 220-5°(2), 0.915, 1.4499, 256, 225, 3.2 + 1011, 0.25, -30°; glutaric acid, XXVI, -, 0.926, 1.4465, 320.7, 181, 4.7 + 10, -, -35°; adipic acid, XXVI, -, 0.924, 1.4467, 301.7, 197, 8.7 + 1010, 0.5, -45°; adipic acid, VIII, -, 1.121, 1.4710(25), 364, 199, 2.3 + 109, 0.41, -35°; XVIII, XXVI, -, 0.961, 1.4530, 385, 197, 7.3 + 1010, 0.35, -50°; sebacic acid, VIII, -, 1.067, 1.4680(25), 298, 218, 7.3 + 109, 0.15, -25°; phthalic acid, VIII, -, 1.205(25), 1.5230, 320, 210, 4.4 + 109, 0.23, -; XX, XXVI, 237-9(3), 0.935, 1.4499, 256, 225, 3.2 + 1011, 0.25, -30°; C7-C9 acids, XX, 200-35°(5), 0.925, 1.4449, 312, 197, 4.5 + 1011, 0.07, -58°; C7-C9 acids, XXII, 220-90°(5), 0.936, 1.4482, 283, 212, 4.5 + 1010, 0.016, -50°; oleic acid, VIII, 222-7°(2), 0.922(25), 1.4655(25), 147-55, 196, 2 + 1011, 0.35, -50°; tetrahydrofurancarboxylic acid (XXVII), XXVI, 117-20°(4), 0.9645, 1.4470, 244.2, -, -, -, -; XXVII, diethylene glycol, 216-18°(3), 1.1921, 1.4684, 376.6, -, -, -, -.

ACCESSION NUMBER: 1959:83380 CAPLUS  
DOCUMENT NUMBER: 53:83380  
ORIGINAL REFERENCE NO.: 53:15048e-i,15049a-i,15050a-i,15051a  
TITLE: Utilization of furfural as initial substance in the plastic industry  
AUTHOR(S): Moshkin, P. A.  
SOURCE: Voprosy Ispol'zovan. Pentozansoderzhashchego Syr'ya, Trudy Vsesoyuz. Soveshchaniya, Riga (1958), Volume

DOCUMENT TYPE: Date 1955 225-54  
Journal  
LANGUAGE: Unavailable

=> d hist

(FILE 'HOME' ENTERED AT 11:36:14 ON 25 JUL 2007)

FILE 'CAPLUS' ENTERED AT 11:36:36 ON 25 JUL 2007

L1 845 S "PROPYLENE OXIDE" AND DISTILLATION  
L2 1 S L1 AND "VAPOR STREAM"  
L3 6 S L1 AND (COMPRESSOR OR COMPRESSED OR COMPRESS)  
L4 0 S DISTALLATION AND PRODUCT AND VAPOR AND (COMPRESSOR OR COMPRES  
L5 167 S DISTILLATION AND PRODUCT AND VAPOR AND (COMPRESSOR OR COMPRES  
L6 0 S L5 AND "HEAT RETURN"  
L7 0 S L5 AND "TAKE OFF"  
L8 6 S L5 AND OXIDE

=> s 15 and "compressed vapor"

67060 "COMPRESSED"  
539939 "VAPOR"  
72770 "VAPORS"  
582817 "VAPOR"  
("VAPOR" OR "VAPORS")  
279 "COMPRESSED VAPOR"  
("COMPRESSED" (W) "VAPOR")  
L9 16 L5 AND "COMPRESSED VAPOR"

=> d 19 1-16 abs ibib

L9 ANSWER 1 OF 16. CAPLUS COPYRIGHT 2007 ACS on STN  
AB Embodiments of the invention are directed toward a novel pressurized  
vapor cycle for distilling liqs. In some embodiments of the  
invention, a liquid purification system is revealed, including the elements of  
an

input for receiving untreated liquid, a vaporizer coupled to the input for  
transforming the liquid to vapor, a head chamber for collecting  
the vapor, a vapor pump with an internal drive shaft  
and an eccentric rotor with a rotatable housing for compressing  
vapor, and a condenser in communication with the vapor  
pump for transforming the compressed vapor into a  
distilled product. Other embodiments of the invention are directed  
toward heat management, and other process enhancements for making the  
system especially efficient.

ACCESSION NUMBER: 2007:89411 CAPLUS  
DOCUMENT NUMBER: 146:145097  
TITLE: Pressurized vapor cycle liquid  
distillation  
INVENTOR(S): Bednarek, David F.; Charles, Robert Andrew; Coll,  
Andrew; Demers, Jason A.; Duggan, Timothy P.;  
Heinzman, Gustav; Hoell, Joseph A.; Jackson, James L.;  
Leonard, Scott A.; McGill, David W.; Owens, Kingston  
PATENT ASSIGNEE(S): Deka Products Limited Partnership, USA  
SOURCE: U.S. Pat. Appl. Publ., 82pp., Cont.-in-part of U.S.  
Ser. No. 713,617.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 4  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2007017192	A1	20070125	US 2006-480294	20060630

US 2004099521	A1	20040527	US 2003-713591	20031113
US 2004159536	A1	20040819	US 2003-714683	20031113
US 2005016828	A1	20050127	US 2003-713617	20031113
PRIORITY APPLN. INFO.:			US 2002-425820P	P 20021113
			US 2003-490615P	P 20030728
			US 2003-518782P	P 20031110
			US 2003-713617	A2 20031113

L9 ANSWER 2 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN

AB The method for separation of a mixture of the liquid components is realized in  
a

unit including a rectification column provided with mass-exchange devices and divided by the horizontal partition into 2 sections: the enrichment section and the stripping section. The mixture of the liquid components is fed into the stripping section, the vapors obtained in the stripping section are withdrawn, compressed, and fed into the enrichment section; the liquid from the enrichment section is fed through a hydraulic seal into the stripping section of the rectification column; a portion of the bottom liquid is withdrawn in the form of a bottom product, and the remaining portion is sent into a main heat exchanger, where the distillate vapors are passed from the enrichment section of the rectification column. A portion of the resulting distillate is withdrawn in the form of a distillate product, and the remaining portion is fed back in the form of the reflux into the enrichment section of the rectification column. The vapors formed in the heat exchanger are recycled into the stripping section of the rectification column. The rectification column has: the branch pipes for feeding of the liquid and withdrawal of the vapors arranged in the stripping section; the line of the vapor intake, connected to a compressor linked with the 1st heat exchanger coupled with a branch pipe for input of the compressed vapors into the enrichment section; the branch pipe for the liquid withdrawal from the enrichment zone of the rectification column connected through the hydraulic seal and the 2nd heat exchanger with the branch pipe for the liquid input into the stripping section; the line of the bottom liquid connected to the 3rd main heat exchanger; a dephlegmator connected to the enrichment section by the line of the vapor withdrawal from the rectification column. The arrangement increases savings of heating steam, decreases atmospheric

emissions,

and decreases the amount of the wastewaters. The method is suitable for chemical and petrochem. industries.

ACCESSION NUMBER: 2006:1358159 CAPLUS  
DOCUMENT NUMBER: 146:103112  
TITLE: Separation of a mixture of liquid components by rectification  
INVENTOR(S): Aristovich, V. Yu.; Charykov, N. A.; Aristovich, Yu. V.; Sokolova, E. V.; Charykov, A. N.  
PATENT ASSIGNEE(S): Russia  
SOURCE: Russ., 7pp.  
CODEN: RUXXE7  
DOCUMENT TYPE: Patent  
LANGUAGE: Russian  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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RU 2290244	C1	20061227	RU 2005-140398	20051226
PRIORITY APPLN. INFO.:			RU 2005-140398	20051226

L9 ANSWER 3 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN

AB Embodiments of the invention are directed toward a novel pressurized vapor cycle for distilling liqs. In some embodiments of the invention, a liquid purification system is revealed, including the elements of  
an



input for receiving untreated liquid, a vaporizer coupled to the input for transforming the liquid to vapor, a head chamber for collecting the vapor, a vapor pump with an internal drive shaft and an eccentric rotor with a rotatable housing for compressing vapor, and a condenser in communication with the vapor pump for transforming the compressed vapor into a distilled product. Other embodiments of the invention are directed toward heat management, and other process enhancements for making the system especially efficient.

ACCESSION NUMBER: 2004:430770 CAPLUS  
DOCUMENT NUMBER: 140:411946  
TITLE: Pressurized vapor cycle liquid distillation  
INVENTOR(S): Bednarek, David F.; Demers, Jason A.; Duggan, Timothy P.; Jackson, James; Leonard, Scott A.; McGill, David W.; Owens, Kingston  
PATENT ASSIGNEE(S): Deka Products Limited Partnership, USA  
SOURCE: PCT Int. Appl., 94 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 4  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004043566	A2	20040527	WO 2003-US36540	20031113
WO 2004043566	A3	20040826		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
CA 2506269	A1	20040527	CA 2003-2506269	20031113
US 2004099521	A1	20040527	US 2003-713591	20031113
AU 2003291547	A1	20040603	AU 2003-291547	20031113
US 2004159536	A1	20040819	US 2003-714683	20031113
EP 1562686	A2	20050817	EP 2003-768953	20031113
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK			
CN 1738668	A	20060222	CN 2003-80108662	20031113
JP 2006507941	T	20060309	JP 2005-507175	20031113
MX 2005PA05245	A	20050908	MX 2005-PA5245	20050513
PRIORITY APPLN. INFO.:			US 2002-425820P	P 20021113
			US 2003-490615P	P 20030728
			US 2003-518782P	P 20031110
			WO 2003-US36540	W 20031113

L9 ANSWER 4 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN

AB A performance anal. is presented for the vapor compression parallel feed multiple effect evaporation water desalination system. The systems include mech. (MVC) and thermal (TVC) vapor compression. The system models take into account the dependence of the stream phys. properties on temperature and salinity, thermodyn. losses, temperature depression in the vapor stream caused by pressure losses and non-condensable gases, flashing within the effects, and the presence of flashing boxes. The anal. is performed as a function of the brine distribution configuration (parallel or parallel/cross flow), the top brine temperature, the temperature of the brine blowdown, and the temperature difference of the

compressed vapor condensate and the brine blowdown. The anal. is focused on variations in the parameters that control the product cost, which includes the sp. heat transfer area, the thermal performance ratio, the specific power consumption, the conversion ratio, and the specific flow rate of the cooling water. Results show consistent behavior with industrial practice, where the thermal performance ratio of the TVC system decreases at higher top brine temps., while the specific power consumption of the MVC systems decreases at higher temps. Also, the sp. heat transfer area for all configurations decreases at higher operating temps. The conversion ratio is found to depend on the brine flow configuration and to be independent of the vapor compression mode. For the parallel flow configuration, the conversion ratio decreases with the increase of the operating temperature. On the other hand, the conversion ratio for the parallel/cross flow system decreases with the increase of the brine blowdown temperature. Predictions of both models show good agreement with field data.

ACCESSION NUMBER: 2000:458215 CAPLUS  
DOCUMENT NUMBER: 133:48573  
TITLE: Multiple effect evaporation-vapour compression desalination processes  
AUTHOR(S): El-Dessouky, H. T.; Ettouney, H. M.; Al-Juwayhel, F.  
CORPORATE SOURCE: Department of Chemical Engineering, College of Engineering and Petroleum, Kuwait University, Kuwait  
SOURCE: Chemical Engineering Research and Design (2000), 78(A4), 662-676  
CODEN: CERDEE; ISSN: 0263-8762  
PUBLISHER: Institution of Chemical Engineers  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 5 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN

AB The comonomer has a b.p. higher than the b.p. of the monomer and the diluent has a b.p. between the b.ps. of the monomer and comonomer. The process and apparatus employ  $\geq 1$  flash tank, a first fractionation stage including a first column and operating at a first fractionation pressure, and a second fraction stage including a second column and operating at a higher second fractionation pressure. Comonomer is withdrawn from the first column as a fractionation product, and overhead vapor containing diluent and monomer is substantially condensed to yield a substantially condensed overhead stream. Liquid and vapor from the stream are separated in an accumulator. Vapor and liquid from the accumulator are compressed and pumped, resp., for delivery to the second fractionation stage at approx. the second fractionation pressure. The pumped liquid is a major portion by weight of the total flow of pumped liquid and compressed vapor to the second fractionation stage. Diluent and monomer are withdrawn from the second column as fractionation products.

ACCESSION NUMBER: 2000:219044 CAPLUS  
DOCUMENT NUMBER: 132:237505  
TITLE: Process and fractionation apparatus for recovering diluent, monomer, and comonomer from a polymerization reactor effluent  
INVENTOR(S): Kreischer, Bruce E.; Verser, Donald W.; Hein, James E.  
PATENT ASSIGNEE(S): Phillips Petroleum Co., USA  
SOURCE: U.S., 6 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 6045661                    A            20000404            US 1998-82398            19980520  
PRIORITY APPLN. INFO.:                    US 1998-82398            19980520  
REFERENCE COUNT:                    9            THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 6 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN

AB Seawater desalination by parallel feed multiple-effect evaporation has a simple layout in comparison with other multiple-effect or multistage desalination systems. Several operating configurations are analyzed, including the parallel flow (MEE-P), the parallel/cross flow (MEE-PC), and systems combined with thermal (TVC) or mech. (MVC) vapor compression. All models take into account dependence of the stream phys. properties on temperature and salinity, thermodyn. losses, temperature depression in the vapor stream caused by pressure losses and the presence of non-condensable gases, and presence of the flashing boxes. Anal. was performed as a function of the number of effects, the heating steam

temperature,

the temperature of the brine blowdown, and the temperature difference of the compressed vapor condensate and the brine blowdown.

Results are presented as a function of parameters controlling the unit product cost, which include the sp. heat transfer area, the thermal performance ratio, the specific power consumption, the conversion ratio, and the specific flow rate of the cooling water. The thermal performance ratio of the TVC and specific power consumption of the MVC are found to decrease at higher heating steam temps. Also, an increase of the heating steam temperature drastically reduces the sp. heat transfer area. Results indicate better performance for the MEE-PC system; however, the MEE-P has a similar thermal performance ratio and simpler design and operating characteristics. The conversion ratio is found to depend on the brine flow configuration and to be independent of the vapor compression mode.

ACCESSION NUMBER:            1999:745816 CAPLUS  
DOCUMENT NUMBER:            131:327205  
TITLE:                    Multiple-effect evaporation desalination systems:  
                             thermal analysis  
AUTHOR(S):                    El-Dessouky, Hisham T.; Ettouney, H. M.  
CORPORATE SOURCE:            Department of Chemical Engineering, College of  
                             Engineering and Petroleum, Kuwait University, Safat,  
                             13060, Kuwait  
SOURCE:                    Desalination (1999), 125(1-3), 259-276  
                             CODEN: DSLNAH; ISSN: 0011-9164  
PUBLISHER:                    Elsevier Science B.V.  
DOCUMENT TYPE:                Journal  
LANGUAGE:                    English  
REFERENCE COUNT:            39            THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 7 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN

AB A preferred process is provided for separating a hydrocarbon mixture containing an

alkene (i.e. C<sub>2</sub>H<sub>4</sub> or C<sub>3</sub>H<sub>6</sub>), corresponding alkane having the same number of C atoms, and ≥1 heavier hydrocarbon component. The process comprises: feeding the hydrocarbon mixture to a 1st distillation tower having an upper reflux stage; recovering a 1st overhead vapor stream rich in alkene and alkane from the 1st distillation tower and passing the 1st overhead vapor stream to a middle distn . stage of a 2nd multistage distillation tower; recovering a 2nd overhead vapor stream rich in alkene from the 2nd distn . tower; adiabatically compressing the alkene-rich vapor stream and passing the compressed vapor to a 2nd distillation tower reboiler stage. This provides a heat pump for cooling and condensing the compressed vapor and heating a liquid reboiler stream. Pressure in the alkene stream is reduced by flashing cooled and condensed vapor from the reboiler stage to provide a partly vaporized flashed mixture stream rich in alkene,

followed by recovering and separating the flashed mixture stream to provide recovering a liquid portion and vapor portion. The liquid portion is passed to a 2nd distillation tower reflux stage and a pure alkene stream is recovered.

ACCESSION NUMBER: 1995:305695 CAPLUS  
DOCUMENT NUMBER: 122:109959  
TITLE: Cryogenic distillation for recovering pure products from mixture of at least three close-boiling components  
INVENTOR(S): Kaufman, Eric A.; Moss, Jack A.; Pickering, Jr John L.  
PATENT ASSIGNEE(S): Mobil Oil Corporation, USA  
SOURCE: U.S., 8 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5372009	A	19941213	US 1993-149495	19931109
CA 2174514	A1	19950518	CA 1994-2174514	19941107
WO 9513511	A1	19950518	WO 1994-US12787	19941107
W: AU, CA, CN, HU, JP, KR, NO, RU				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9481330	A	19950529	AU 1994-81330	19941107
AU 675893	B2	19970220		
EP 728284	A1	19960828	EP 1995-900539	19941107
R: BE, DE, ES, FR, GB, IT, NL, PT, SE				
CN 1134748	A	19961030	CN 1994-194034	19941107
JP 09505337	T	19970527	JP 1994-513917	19941107
HU 75977	A2	19970528	HU 1996-930	19941107
NO 9601652	A	19960425	NO 1996-1652	19960425
PRIORITY APPLN. INFO.:			US 1993-149495	A 19931109
			WO 1994-US12787	W 19941107

L9 ANSWER 8 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN  
AB The title process involves (A) compressing a gas stream containing olefinic hydrocarbons and lower boiling components at 50-150 °F/100-500 psig, (B) cooling and partially condensing the compressed vapor stream to yield a condensate containing 1-30% lower-boiling components, (C) combining the condensate streams and flash evaporating at 0-200 psig to produce a vapor and a liquid stream, and (D) distilling the liquid stream to yield a vapor product containing substantially all of the lower-boiling components and a liquid product rich in the olefinic hydrocarbons. A significant reduction of the pressure in the distillation step is achieved and the olefinic products loss is greatly reduced. A process schematic is given.

ACCESSION NUMBER: 1990:199325 CAPLUS  
DOCUMENT NUMBER: 112:199325  
TITLE: Method and apparatus for C3-5 olefin recovery from a gas stream  
INVENTOR(S): Andre, Robert S.  
PATENT ASSIGNEE(S): Air Products and Chemicals, Inc., USA  
SOURCE: U.S., 7 pp. Cont.-in-part of U.S. Ser. No. 150,816, abandoned.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 2  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4885063	A	19891205	US 1988-260345	19881019

PRIORITY APPLN. INFO.:

US 1988-150816

A2 19880201

L9 ANSWER 9 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN

AB A process for separation of alcs. (especially EtOH) from aqueous alc. solns. in a

multicolumn combined distillation-rectification-dewatering process is characterized by heat transfer from the alc. vapors from distillation or dewatering columns (with a smaller temperature difference between the overheads and the bottoms than the in the rectification column) to heating surfaces of  $\geq 1$  evaporators. Gaseous alc. from the evaporators are combined with alc. vapors from the rectification column and mech. compressed, and the compressed vapors are used to heat the bottoms products of the distillation, purification, and dewatering columns.

ACCESSION NUMBER: 1986:481152 CAPLUS  
DOCUMENT NUMBER: 105:81152  
TITLE: Manufacture of alcohols  
INVENTOR(S): Niestroj, Waldemar  
PATENT ASSIGNEE(S): Krupp, Fried., G.m.b.H., Fed. Rep. Ger.  
SOURCE: Ger. Offen., 15 pp.  
CODEN: GWXXBX  
DOCUMENT TYPE: Patent  
LANGUAGE: German  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3428663	A1	19860206	DE 1984-3428663	19840803
DE 3428663	C2	19860717		

PRIORITY APPLN. INFO.: DE 1984-3428663 19840803

L9 ANSWER 10 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN

AB To sep. C<sub>3</sub>H<sub>8</sub> [74-98-6] from isobutane [75-28-5] in a feedstock containing minor amts. of other C<sub>2</sub>-4 hydrocarbons, the feed is introduced to a stripping section at 43°. A vapor stream from the stripping section (at 21° and 4 kg/cm<sup>2</sup>) is removed to a heat pump compressor where it is compressed to 18 kg/cm<sup>2</sup> and 81°; the compressed vapors are then introduced to the bottom of a rectifying section. A vapor stream (at 54°) from the rectifying section is condensed and a portion of the condensate is refluxed. A liquid stream from the bottom of the rectifying section is introduced into the top of the stripping section. Bottoms liquid from the stripping section is taken as the isobutane product. This process consumes 50% of the energy required by conventional distillation

ACCESSION NUMBER: 1984:633023 CAPLUS  
DOCUMENT NUMBER: 101:233023  
TITLE: Heat pump fractionation  
INVENTOR(S): Spangler, Carl D.  
PATENT ASSIGNEE(S): Conoco, Inc., USA  
SOURCE: Can., 13 pp.  
CODEN: CAXXA4  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CA 1173781	A1	19840904	CA 1981-372935	19810313

PRIORITY APPLN. INFO.: CA 1981-372935 19810313

L9 ANSWER 11 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN

AB The distillation plant has  $\geq 2$  columns. The pump for feeding

the bottom product of one column into the upper part of the vent column is eliminated by placing an orifice in the line, the orifice being sized and spaced below the column bottom so as to produce selfventing. The reboiler is eliminated by compressing the overhead vapor from the downstream column and feeding it into the bottom of the upstream column. A heat exchange is provided for heat exchange between the compressed-vapor stream and the bottom-product stream downstream of the orifice. The arrangement is suitable for separating D2O and H2O.

ACCESSION NUMBER: 1982:145046 CAPLUS  
DOCUMENT NUMBER: 96:145046  
TITLE: Process and apparatus for fractionating close boiling components of a multicomponent system  
INVENTOR(S): Tsao, Utah  
PATENT ASSIGNEE(S): CE Lummus, USA  
SOURCE: U.S., 4 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4315802	A	19820216	US 1980-148977	19800512
US 4360405	A	19821123	US 1981-281536	19810708
GB 2107597	A	19830505	GB 1981-29637	19811001
GB 2107597	B	19850227		
JP 58064101	A	19830416	JP 1981-163367	19811013
JP 62022642	B	19870519		
CA 1151396	A1	19830809	CA 1981-388443	19811021
PRIORITY APPLN. INFO.:			US 1980-148977	A3 19800512

L9 ANSWER 12 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN

AB A process is described for fractionating 2 or more compds. in which the stripping section of the fractionator is maintained at a first pressure and the rectifying section of the fractionator is maintained at a higher pressure. Overhead vapors from the stripping section are compressed in a heat pump where the vapor temperature and pressure are raised and the heated and compressed vapors are fed to the bottom of the rectifying section. Overhead vapors from the rectifying section, at a higher temperature than the bottoms from the stripping section, are heat exchanged with stripping section bottoms to condense overhead vapors and to supply reboiling heat to the stripping section. Thus, a feed stream containing multiple components is fed to the stripping section at 43°. The condensed liquid recovered as product has the composition predominantly C2H4, C2H6, C3H6, C3H8 and the bottoms liquid contained substantially C4H8, isobutane, and n-butane.

ACCESSION NUMBER: 1982:8745 CAPLUS  
DOCUMENT NUMBER: 96:8745  
TITLE: Heat pump fractionation process  
INVENTOR(S): Spangler, Carl D., Jr.  
PATENT ASSIGNEE(S): Conoco, Inc., USA  
SOURCE: U.S., 5 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4277268	A	19810707	US 1979-85825	19791017
EP 60357	A1	19820922	EP 1981-301159	19810318
R: DE, FR, GB, IT, NL				

JP 57165003                      A            19821009            JP 1981-50687                      19810406  
PRIORITY APPLN. INFO.:                      US 1979-85825                      19791017

L9 ANSWER 13 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN  
AB In fractional distillation, vapors from each stage are compressed to a pressure at which the b.p. temperature equals the temperature from which the vapors came, and the compressed vapors are fed to the next stage where partial condensation occurs isothermally resulting in min. entropy increase. In an example, a H2SO4 plant effluent stream, containing 5.25 SO2 at 8 atm, is cleaned, cooled to 86°F, and absorbed in H2O to form a solution containing 0.006 mole fraction SO2. This solution is fed to the top section of a 4-stage packed stripping tower at 40°F as 4500 lb/hr stripping steam per 114,000 gallons/hr of feed are fed into the bottom section. Vapors are compressed by interstage compressors from an initial 34 to 50, 140, and 256 mm Hg, resp., in passing upwards through the stages. Final tower product contains 87 SO2. Liquid flows countercurrently through the packed sections for removal at the tower bottom. Interstage compressor horsepower requirements are 90, 300, and 180, resp. to produce 323 lb moles/hr of SO2 and 49 lb moles H2O. Also described is a system for separating propane and propylene in a 33-stage rectifying and 22-stage stripping section tower at top and bottom temps. of -30 and -40°F, resp., with top and bottom pressures of 1.8 and 1.1 atm, resp. Interstage compression is effected by fans.

ACCESSION NUMBER: 1971:423256 CAPLUS  
DOCUMENT NUMBER: 75:23256  
TITLE: Isothermal fractional distillation of materials of differing volatilities  
INVENTOR(S): Gunther, Arnold  
PATENT ASSIGNEE(S): Treadwell Corp.  
SOURCE: U.S., 9 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 2  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3575007	A	19710413	US 1968-716188	19680326
GB 1250236	A	19711020	GB 1969-1250236	19690318
BE 730474	A	19690901	BE 1969-730474	19690326
NL 6904660	A	19690930	NL 1969-4660	19690326
DE 1915437	A	19691113	DE 1969-1915437	19690326
FR 2004777	A5	19691128	FR 1969-8919	19690326
CH 487662	A	19700331	CH 1969-487662	19690326
NO 127039	B	19730430	NO 1969-1276	19690326
SE 361824	B	19731119	SE 1969-4272	19690326
PRIORITY APPLN. INFO.:			US 1968-716188	A 19680326

L9 ANSWER 14 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN  
AB The process of U.S. 2,-600,110 (CA 46, 8358h), which is based on the heat-pump principle, is improved by passing a major portion of the compressed vapors of the kettle product refrigerant to the kettle section of the fractionator and compressing the rest of the vapors in a 2nd compression step so that they are condensed by available cooling water, thus increasing the efficiency of heat transfer. The improved process is particularly adapted to the separation of C2H4 from C2H6, C3H6 from C3H8, and C4H8 from C4H10.

ACCESSION NUMBER: 1966:57911 CAPLUS  
DOCUMENT NUMBER: 64:57911  
ORIGINAL REFERENCE NO.: 64:10793d-e  
TITLE: Fractional distillation  
INVENTOR(S): Palen, Joseph W.; Moon, John J.  
PATENT ASSIGNEE(S): Phillips Petroleum Co.

SOURCE: 5 pp.  
DOCUMENT TYPE: Patent  
LANGUAGE: Unavailable  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3229471		19660118	US 1961-160066	19611218
PRIORITY APPLN. INFO.:			US	19611218

L9 ANSWER 15 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN  
AB The kettle product is employed as an internal refrigerant by expanding it and using it to cool the overhead product. Energy is supplied to the system by means of a compressor which compresses that portion of the kettle product which cools the overhead condenser. This compressed vapor is fed to the kettle portion of the column to provide stripping-section vapor. This method of supplying energy is competitive with conventional heating with steam if the cost of electricity used in running the compressor is no more than four times the cost of steam. This method is particularly appropriate in the case of a relatively difficult separation, such as C<sub>2</sub>H<sub>4</sub>-C<sub>2</sub>H<sub>6</sub>, butadiene-2-butene, C<sub>3</sub>H<sub>6</sub>-C<sub>3</sub>H<sub>8</sub>, and N-CH<sub>4</sub>. It may also be applied to vaporizable materials such as C<sub>5</sub>-C<sub>8</sub> hydrocarbons or even higher-boiling materials. Cf. C.A. 46, 8358h.

ACCESSION NUMBER: 1956:34474 CAPLUS  
DOCUMENT NUMBER: 50:34474  
ORIGINAL REFERENCE NO.: 50:6846i, 6847a-b  
TITLE: Fractional distillation  
INVENTOR(S): Hachmuth, Karl H.  
PATENT ASSIGNEE(S): Phillips Petroleum Co.  
DOCUMENT TYPE: Patent  
LANGUAGE: Unavailable  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2731810		19560124	US	

L9 ANSWER 16 OF 16 CAPLUS COPYRIGHT 2007 ACS on STN  
AB Dilute aqueous solns. of oxygenated organic compds. produced as secondary products in the Fischer-Tropsch process are concentrated by fractional distillation in two stages. The first fractionating column contains a relatively small number of plates and is operated so as to produce a bottoms fraction consisting essentially of water. The enriched overhead fraction is compressed in a compressor driven by a steam turbine. The compressed vapors enter a heat-exchanger where they are condensed, supplying their heat of vaporization to the reboiler of the column. Part of the resulting liquefied overhead is returned to the column as reflux and the remainder is fed to a second column containing a relatively large number of plates. This column produces an overhead fraction of the desired final concentration, the bottoms being essentially water. The entire process is controlled by varying the degree of compression in accordance with the composition of the liquid on an intermediate tray in the second column, the degree of compression decreasing as the concentration of oxygenated compds. increases. Thus, the second column is operated to produce the desired separation between water and oxygenated products, while the first column is automatically controlled to supply the maximum quantity of oxygenated products which the second column is capable of concentrating. The exhaust steam from the turbine is used to preheat the feed to the system and to supply heat to the reboiler of the second column. Thus, all the necessary heat is supplied in the steam to the turbine.

ACCESSION NUMBER: 1950:37230 CAPLUS



DOCUMENT NUMBER: 44:37230  
ORIGINAL REFERENCE NO.: 44:7100h-i,7101a-b  
TITLE: Process and apparatus for concentrating dilute  
solutions  
INVENTOR(S): Cornell, P. W.  
PATENT ASSIGNEE(S): Gulf Oil Corp. *yer*  
DOCUMENT TYPE: Patent  
LANGUAGE: Unavailable  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2509136		19500523	US 1949-99788	19490617

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---Logging off of STN---

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Executing the logoff script...

=> LOG Y

COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	160.30	160.51
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE	TOTAL
	ENTRY	SESSION
CA SUBSCRIBER PRICE	-21.84	-21.84

STN INTERNATIONAL LOGOFF AT 12:10:35 ON 25 JUL 2007